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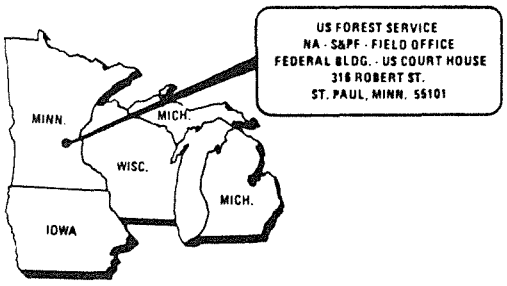

INJURY TO YOUNG TREMBLING ASPEN STEMS

By Imants Millers[1/]

During the routine investigations of surveillance reports, a high frequency of various types of injuries to young aspen suckers was observed. An exploratory survey was designed to determine the extent and seriousness of the problem. The preliminary data are presented here to draw the attention of the forest managers and research to the potential significance of these observations.

METHODS

Six trembling aspen stands, clearcut three years preceeding the survey, were selected from the better aspen sites. The stands were located in the following areas: 3 from Lower Michigan--near Cadillac, Manistee and White Cloud; 2 from Northeast Wisconsin--near Antigo and Langlade; and one stand near Black River Falls, Central Wisconsin. The average stand had about 9000 trees per acre, about a third in each crown class category. The average height of the dominant trees was 10 ft.

Ten circular millacre plots were sampled in each stand. The plots were scattered in about a 10 acre area and located in representative clusters of reproduction for the stand.

Injury data was recorded for each tree in the plot by type of injury and the height on the stem. The following injury classes were used:

Crook - fork, sweep, bend, bayonet; usually caused by top-kill, or reduced terminal growth allowing a latteral branch to become the dominant stem.

Canker - open wounds exposing wood; when healing occurs, the canker was considered as such until the cambium of the wound edges was fused.

Rough Bark - abnormal roughness on the bark; usually evidence of a healed canker.

1/ Appreciation is expressed to Messrs. Stan Banash and Frank Morse, Wisc. DNR; and TM staffs of Manistee and Nicolet National Forests, for their assistance in the survey.

Swelling - abnormal growth of wood; bulging without evidence of canker.

Top-kill - terminal bud, or shoot, killed.

No attempts were made to identify causal organisms for the injury. However, observations indicate that most injuries were caused by insects and fungi.

The crown position of each tree was classed as one of the following: dominant (includes codominant), intermediate, or suppressed.

RESULTS AND DISCUSSION

The preliminary analysis presented here was obtained from stand averages, but the values should not differ greatly from averages of trees. Table 1 shows the percentages of aspen trees with the various types of injury.

TABLE I. PERCENTAGES OF ASPEN SUCKERS WITH VARIOUS TYPES OF INJURY AFTER THREE GROWING SEASONS: AS BASED ON STAND AVERAGES.

Type of Injury	Crown Classes		
	Dominants	Intermediates	Suppressed
	(percentages)		
Crooks and/or Cankers	99	99	100
Crooks only	76	82	87
Cankers only	90	80	88
Rough Bark	72	57	32
Swelling	30	24	31
Top-kill	22	29	40

Almost all the trees had either a crook, or a canker, or both. The incidence of crooks increased with the lower crown positions. Similarly, top-kill followed the same pattern. One may only speculate whether top-kill is more frequent among suppressed trees, or that top-killed trees are less competitive and therefore become suppressed. The average number of crooks per tree was 1.78 for suppressed and 1.35 for dominants. The major cause for top-kill appears to be Venturia sp. fungus.

The incidence of cankers was about equal for all the crown classes. Almost 90% of trees had at least one canker on the main stem.

Rough bark was more common on dominant trees than the suppressed trees. Also, the number of rough bark spots increased from 0.52 per suppressed stem to 2.17 per dominant stem. Since most of the rough bark injury probably originated from cankers, one may speculate that either the vigorous trees are more likely to recover from cankers, or the more severe cankers suppress a young stem.

The economic importance of the injury on young aspen suckers is not known. Field observations indicate that wood discoloration is common at crooks and cankers, and also detectable at the rough bark sites. Future impact on wood quality needs evaluation.